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- a first conductivity type or non-doped second semiconductor layer represented by a composition formula $Al_yGa_{1-y}N$ ($0 \leq y \leq 1, x < y$) and is formed on the first semiconductor layer;
 - a second conductivity type third semiconductor layer 5 represented by a composition formula $Al_xGa_{1-x}N$ ($0 \leq x \leq 1$) and is selectively formed above the second semiconductor layer;
 - a gate insulator formed on the third semiconductor layer;
 - a gate electrode formed on the gate insulator; 10
 - a source electrode electrically connected to the second semiconductor layer;
 - a drain electrode electrically connected to the second semiconductor layer;
 - an insulator formed on the gate electrode; 15
 - a first field plate electrode which is formed on the insulator so as to cover the gate electrode and is connected to the source electrode; and
 - a second field plate electrode which is formed on the insulator and is connected to the drain electrode. 20
4. The semiconductor device according to claim 3, wherein the distance between the drain electrode and the third semiconductor layer is longer than the distance between the source electrode and the third semiconductor layer. 25
5. A semiconductor device, comprising:
- a first semiconductor layer represented by a composition formula $Al_xGa_{1-x}N$ ($0 \leq x \leq 1$);
 - a first conductivity type or non-doped second semiconductor layer represented by a composition formula $Al_yGa_{1-y}N$ ($0 \leq y \leq 1, x < y$) and is formed on the first semiconductor layer; 30
 - a second conductivity type third semiconductor layer represented by a composition formula $Al_xGa_{1-x}N$ ($0 \leq x \leq 1$) and is selectively formed above the second semiconductor layer; 35
 - a gate insulator formed on the third semiconductor layer;
 - a gate electrode formed on the gate insulator;
 - a source electrode electrically connected to the second semiconductor layer; 40
 - a drain electrode electrically connected to the second semiconductor layer;
 - a fourth semiconductor layer formed on a surface of the first semiconductor layer opposite to a surface facing the second semiconductor layer, 45
- wherein the fourth semiconductor layer is connected to the source electrode.

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6. The semiconductor device according to claim 5, wherein the distance between the drain electrode and the third semiconductor layer is longer than the distance between the source electrode and the third semiconductor layer.
7. A semiconductor device, comprising:
- a first semiconductor layer represented by a composition formula $Al_xGa_{1-x}N$ ($0 \leq x \leq 1$);
 - a first conductivity type or non-doped second semiconductor layer represented by a composition formula $Al_yGa_{1-y}N$ ($0 \leq y \leq 1, x < y$) and is formed on the first semiconductor layer;
 - a second conductivity type third semiconductor layer represented by a composition formula $Al_xGa_{1-x}N$ ($0 \leq x \leq 1$) and is selectively formed above the second semiconductor layer;
 - a gate insulator formed on the third semiconductor layer;
 - a gate electrode formed on the gate insulator;
 - a source electrode electrically connected to the second semiconductor layer;
 - a drain electrode electrically connected to the second semiconductor layer;
- wherein the gate electrode and the source electrode are formed in stripe shapes parallel to each other; and wherein the third semiconductor layer has a first stripe portion and a second stripe portion, the first stripe portion being formed in a first direction which is the longitudinal direction of the gate electrode, and the second stripe portion being formed so as to extend in a second direction orthogonal to the first direction from the first stripe portion and to contact the source electrode.
8. The semiconductor device according to claim 7, wherein the first stripe portion is discontinuously formed so that each segment is arranged at a predetermined interval.
9. The semiconductor device according to claim 7, wherein the third semiconductor layer has a plurality of the second stripe portion arranged at a predetermined pitch, and the width of the second stripe portion is equal to or less than the pitch.
10. The semiconductor device according to claim 7, wherein the distance between the drain electrode and the third semiconductor layer is longer than the distance between the source electrode and the third semiconductor layer.

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